

CHAPTER 13

Local Hazard Assessment

Local Hazard Assessment

The 2018 LHMP analysis for the SHMP update is based on a review of content of approved LHMPs, especially use of the risk assessment and mitigation strategies portions. As of October 2018, the State has 16 FEMA-approved county or city LHMPs. The State also has a few special district mitigation plans.

Map 1. FEMA-Approved County LHMPs as of 1/1/2019

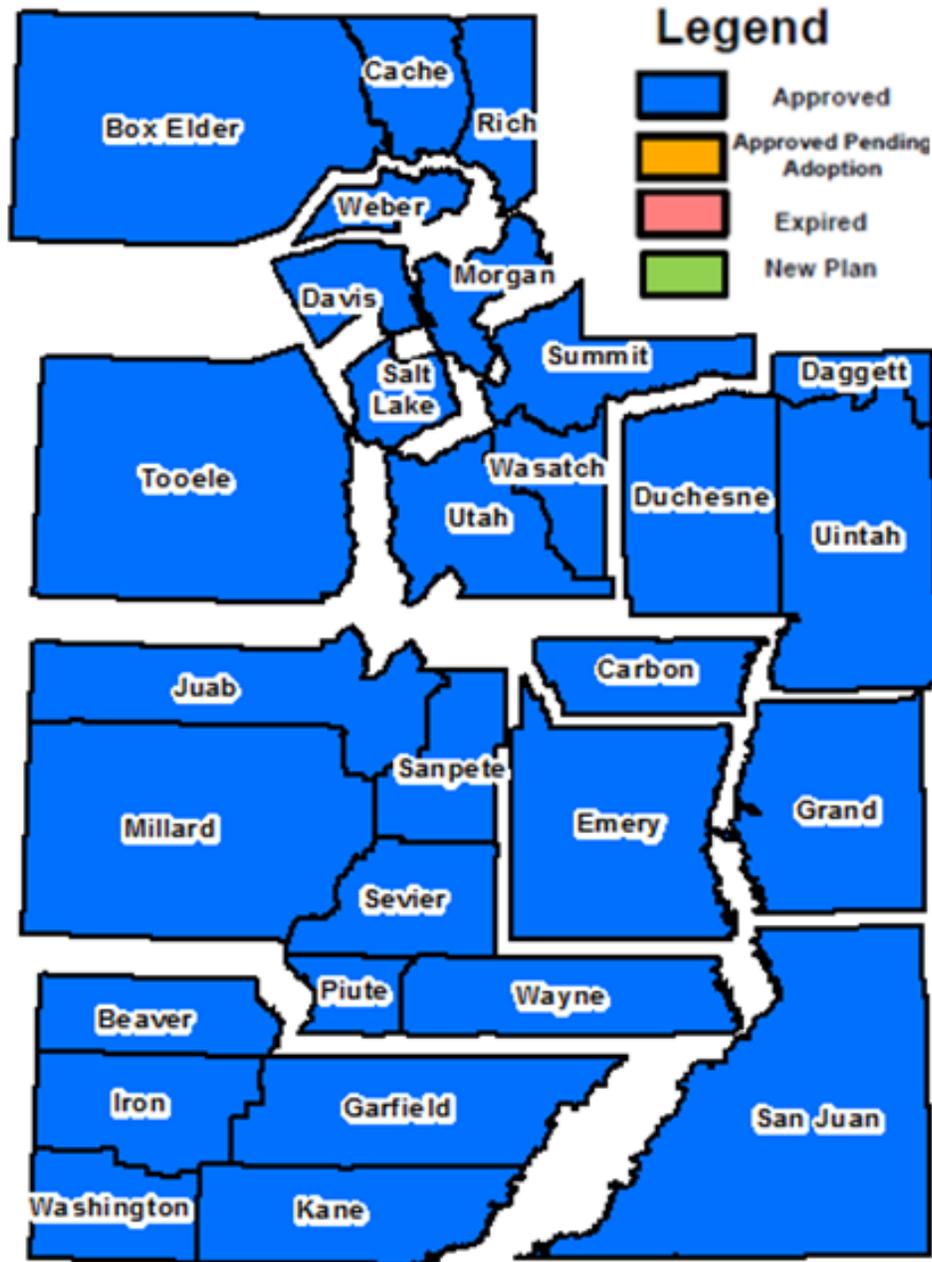


Table 1 shows the percentage of communities that identified specific hazards in their LHMPs and how they ranked those hazards based on approved LHMPs as of October 2018. Earthquake, flood, landslide, severe weather, and wildfire were identified by all of the LHMPs as a hazard for their communities. While radon, infestation, and problem soils were identified have the lowest percentage for identification as a hazard in the LHMPs. The highest ranking hazards for high risk were wildfire, drought, infestation, and flood. Also, the highest ranking hazards for moderate risk were severe weather, flood, landslide, and dam failure.

Table 1. Hazards Identified in LHMPs as of October 2018

Hazard	Percent of Counties in LHMPs identifying as a hazard	Percent of LHMPs identifying as High ranking	Percent of LHMPs identifying as Moderate ranking
Dam Failure	83%	0%	66%
Drought	97%	38%	59%
Earthquake	100%	10%	59%
Flood	100%	17%	76%
Infestation	55%	21%	31%
Landslide	100%	7%	69%
Problem Soils	59%	0%	38%
Radon	48%	3%	28%
Severe Weather	100%	0%	83%
Wildfire	100%	41%	48%

The following maps show the relative ranking of the hazards identified in the LHMPs as derived from the 2018 LHMP analysis for the SHMP update. For more detail on each hazard see hazard sections. The hazard ranking determinations in the 2018 LHMP analysis utilized the following method:

Severity	Probability/Frequency
Catastrophic	4 Highly Likely 4
Critical	3 Likely 3
Limited	2 Possible 2
Negligible	1 Unlikely (Occasional) 1
Null	0 Null 0

LHMP Hazard Ranking	
High	7-8
Moderate	4-6
Low	1-3
Null/No data	0

The risk assessment portions of the LHMP were reviewed to gather data on severity and probability/frequency for each hazard identified. Each category was given a number from 0 to 4 and then combined to determine a LHMP hazard ranking from 0 - 8.

Table 2. Hazard Rankings from LHMPs

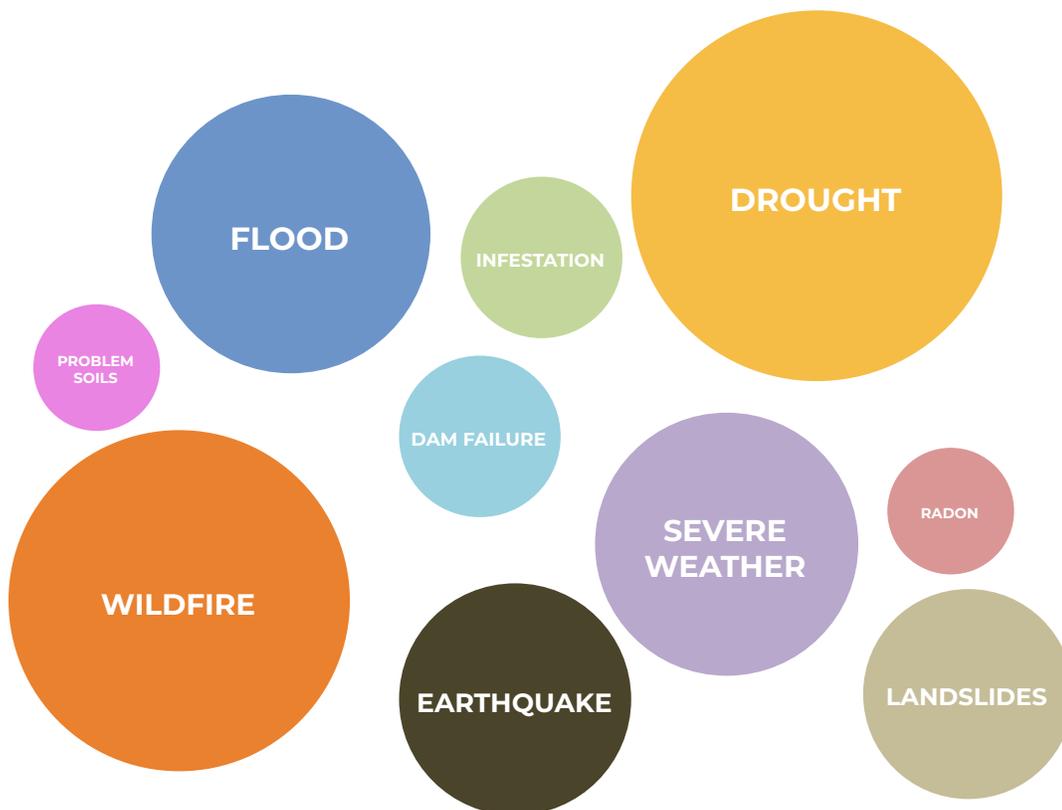
County	Flood	Wildfire	Landslide	Problem Soils	Dam Failure	Severe Weather	Earthquake	Drought	Infestation	Radon	Total
Beaver	3	7	3	3	0	3	3	7	0	7	36
Box Elder	5	7	7	6	5	6	6	6	6	6	60
Cache	5	6	5	6	5	6	5	6	6	6	56
Carbon	5	7	4	5	2	5	7	5	2	0	42
Daggett	6	8	5	0	6	6	6	8	8	0	53
Davis	5	7	6	3	6	6	7	6	0	0	46
Duchesne	5	8	5	0	5	6	5	8	8	0	50
Emery	6	8	5	4	5	5	5	8	5	0	51
Garfield	7	3	5	3	0	3	3	7	0	3	34
Grand	7	6	3	4	4	6	3	5	5	0	43
Iron	7	7	5	3	0	3	3	7	0	3	38
Juab	5	5	3	0	3	6	5	6	0	0	33
Kane	7	3	5	3	0	3	3	7	0	3	34
Millard	0	6	3	0	4	4	5	6	0	0	28
Morgan	5	7	7	4	6	6	5	0	0	0	40
Piute	5	5	4	0	3	4	6	6	0	0	33
Rich	4	5	3	6	5	6	3	6	6	6	50
Salt Lake	6	6	5	4	5	6	7	6	5	4	54
San Juan	6	6	4	4	4	6	3	7	5	0	45
Sanpete	5	6	5	0	3	4	5	6	0	0	34
Sevier	6	5	3	0	3	4	6	6	0	0	33
Summit	5	6	4	0	4	6	5	5	7	6	48
Tooele	5	7	5	4	5	6	6	6	6	6	56
Uintah	6	7	5	0	5	6	5	8	8	0	50
Utah	5	6	5	0	5	6	5	5	7	6	50
Wasatch	4	6	4	0	4	6	4	5	7	6	46
Washington	7	7	5	3	0	3	5	7	0	3	40
Wayne	5	3	3	0	4	4	3	6	0	0	28
Weber	5	6	5	4	6	6	5	7	4	0	48
Total	152	176	131	69	107	147	139	178	95	65	

See the following table and figure which summarizes how each hazard’s risk is perceived from the LHMPs around the State. This does not represent actual risk, but is based on how each county perceives their risk to the various natural hazards identified. Based on this analysis Drought received the highest risk score of 178 and radon received the lowest score with 65. If one were to look at risk based on total fatalities, radon is responsible for the highest number of estimated fatalities. See the individual hazard chapters for more information.

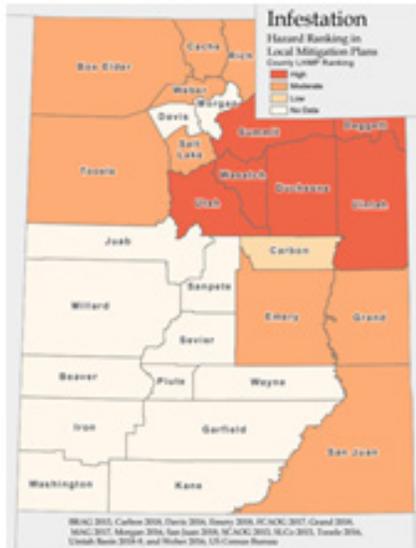
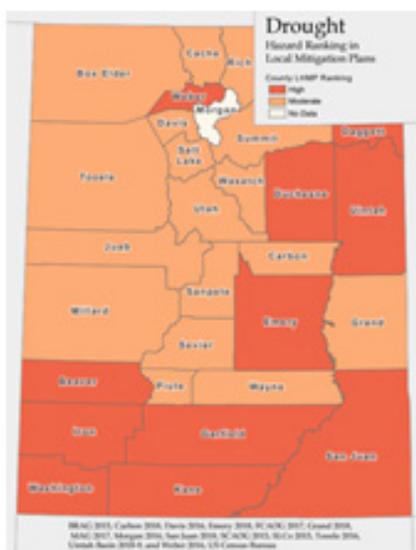
Table 3. Summary of Hazard Rankings from LHMPs

Hazard	LHMP Score	Percentage
Drought	178	77%
Wildfire	176	76%
Flood	152	66%
Severe Weather	147	63%
Earthquakes	139	60%
Landslides	131	56%
Dam Failure	107	46%
Infestation	95	41%
Problem Soils	69	30%
Radon	65	28%

Figure 1. Hazard Risk in Utah based on LHMP Reporting



Map 2. Maps of LHMP Hazard Ranking Analysis for All Hazards

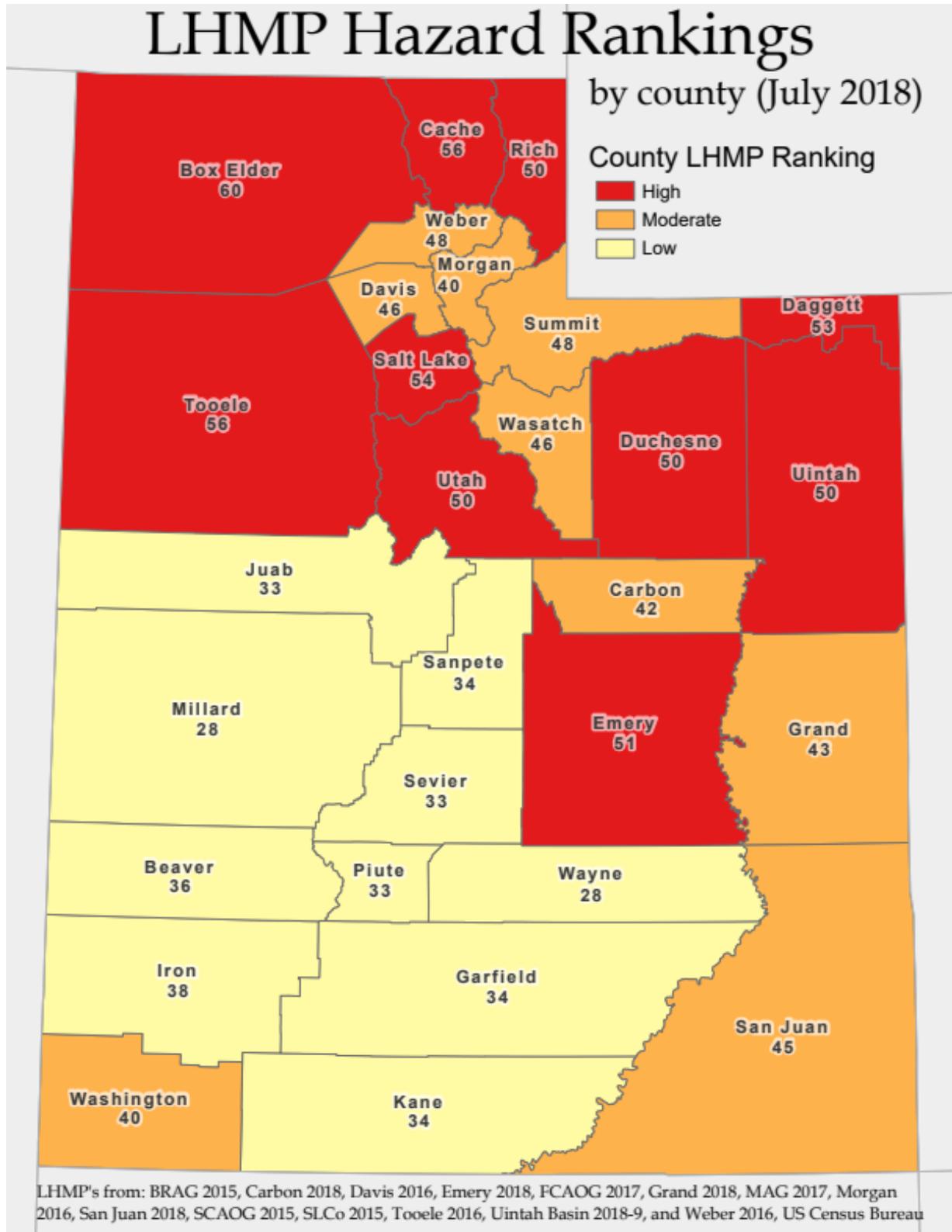


All of the LHMP rankings for each hazard were combined for each county as displayed in Table 2 and Map 3. In addition, the number of FEMA Major Disaster Declarations was calculated for each county, as well as the number of various federal declarations including: Major Disaster Declarations, Emergency Declarations, Fire Management Assistance Declarations, and Secretarial Disaster Designations for Drought.

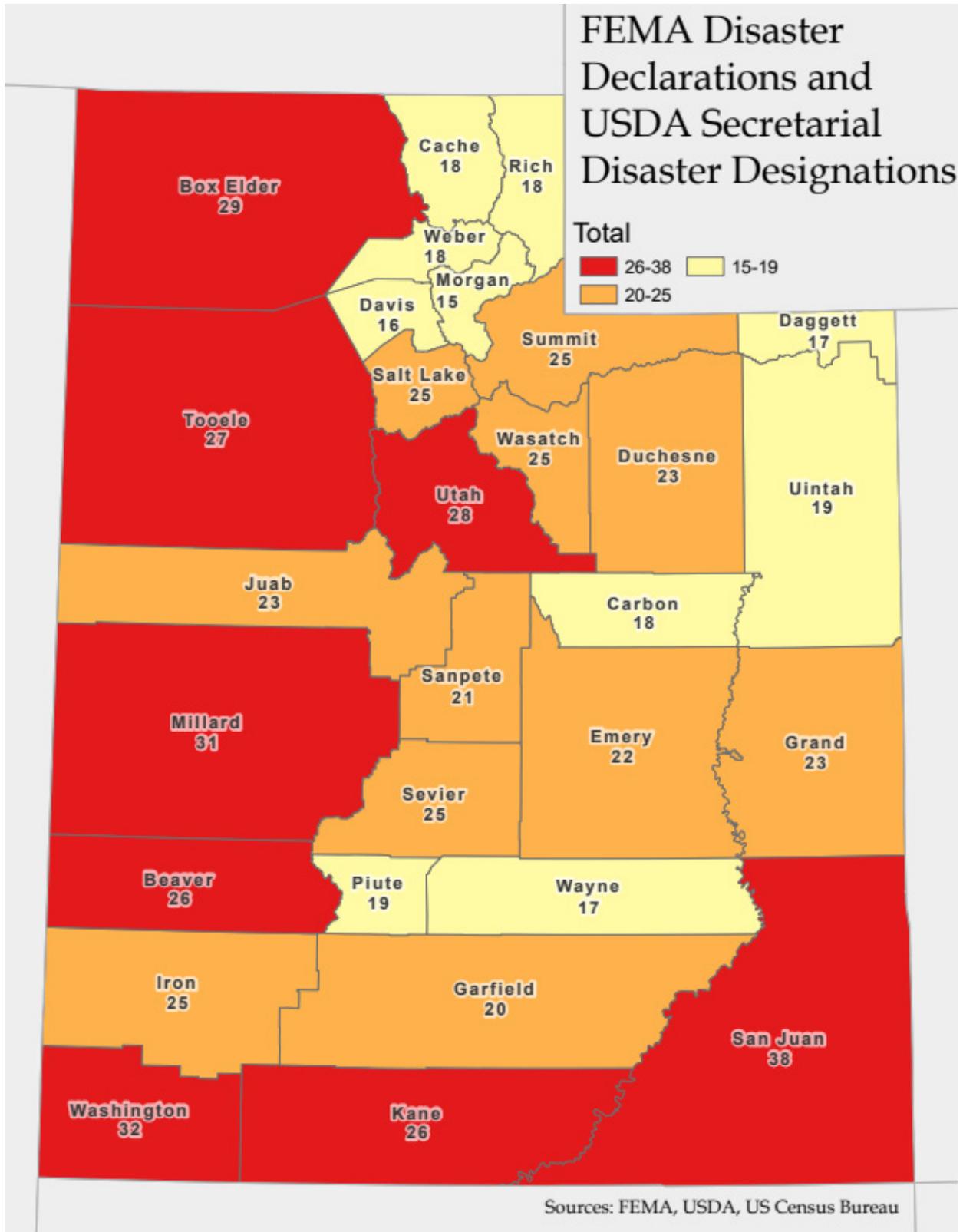
Table 4. LHMP Rankings, Major Disaster Declarations, and Federal Declarations

LHMP Rankings		Major Disaster Declarations		Federal Declarations*	
Box Elder	60	Box Elder	5	San Juan	38
Cache	56	Wasatch	5	Washington	32
Tooele	56	Salt Lake	4	Millard	31
Salt Lake	54	Sevier	4	Box Elder	29
Daggett	53	Tooele	4	Utah	28
Emery	51	Washington	4	Tooele	27
Duchesne	50	Weber	4	Beaver	26
Rich	50	Beaver	3	Kane	26
Uintah	50	Cache	3	Iron	25
Utah	50	Davis	3	Salt Lake	25
Summit	48	Kane	3	Sevier	25
Weber	48	Millard	3	Summit	25
Davis	46	Morgan	3	Wasatch	25
Wasatch	46	Sanpete	3	Duchesne	23
San Juan	45	Summit	3	Grand	23
Grand	43	Uintah	3	Juab	23
Carbon	42	Utah	3	Emery	22
Morgan	40	Daggett	2	Sanpete	21
Washington	40	Duchesne	2	Garfield	20
Iron	38	Emery	2	Piute	19
Beaver	36	Garfield	2	Uintah	19
Garfield	34	Juab	2	Cache	18
Kane	34	Piute	2	Carbon	18
Sanpete	34	Carbon	1	Rich	18
Juab	33	Iron	1	Weber	18
Piute	33	Rich	1	Daggett	17
Sevier	33	Grand	0	Wayne	17
Millard	28	San Juan	0	Davis	16
Wayne	28	Wayne	0	Morgan	15

Note: Red = High, Orange = Moderate, Yellow = Low; * Federal declarations include: Major Disaster Declarations, Emergency Declarations, Fire Management Assistance Declarations, and Secretarial Disaster Designations for Drought.



Map 4. FEMA Disaster Declarations and USDA Secretarial Disaster Designations



The combined total LHMP Rankings for each county was compared against the number of Major Disaster Declarations as well as the other federal declarations utilized. This was completed to show how the LHMP rankings compared to real world disaster events. The colors indicate high (red), moderate (orange), and low (yellow) numbers for the various categories. If the colors match up across each column for each county, than it serves as an indicator that how the LHMPs perceived their risk to natural hazards matches somewhat to actual disaster events.

Tables 5 and 6. LHMP Rankings vs Major Disaster Declarations and Federal Declarations

LHMP Rankings		Major Disaster Declarations		LHMP Rankings		Federal Declarations	
Box Elder	60	Box Elder	5	Box Elder	60	Box Elder	29
Cache	56	Cache	3	Cache	56	Cache	18
Tooele	56	Tooele	4	Tooele	56	Tooele	27
Salt Lake	54	Salt Lake	4	Salt Lake	54	Salt Lake	25
Daggett	53	Daggett	2	Daggett	53	Daggett	17
Emery	51		2	Emery	51	Emery	22
Duchesne	50	Duchesne	2	Duchesne	50	Duchesne	23
Rich	50	Rich	1	Rich	50	Rich	18
Uintah	50	Uintah	3	Uintah	50	Uintah	19
Utah	50	Utah	3	Utah	50	Utah	28
Summit	48	Summit	3	Summit	48	Summit	25
Weber	48	Weber	4	Weber	48	Weber	18
Davis	46	Davis	3	Davis	46	Davis	16
Wasatch	46	Wasatch	5	Wasatch	46	Wasatch	25
San Juan	45	San Juan	0	San Juan	45	San Juan	38
Grand	43	Grand	0	Grand	43	Grand	23
Carbon	42	Carbon	1	Carbon	42	Carbon	18
Morgan	40	Morgan	3	Morgan	40	Morgan	15
Washington	40	Washington	4	Washington	40	Washington	32
Iron	38	Iron	1	Iron	38	Iron	25
Beaver	36	Beaver	3	Beaver	36	Beaver	26
Garfield	34	Garfield	2	Garfield	34	Garfield	20
Kane	34	Kane	3	Kane	34	Kane	26
Sanpete	34	Sanpete	3	Sanpete	34	Sanpete	21
Juab	33	Juab	2	Juab	33	Juab	23
Piute	33	Piute	2	Piute	33	Piute	19
Sevier	33	Sevier	4	Sevier	33	Sevier	25
Millard	28	Millard	3	Millard	28	Millard	31
Wayne	28	Wayne	0	Wayne	28	Wayne	17

Note: Red = High, Orange = Moderate, Yellow= Low; * Federal declarations include: Major Disaster Declarations, Emergency Declarations, Fire Management Assistance Declarations, and Secretarial Disaster Designations for Drought.

The counties with LHMP rankings that correlate with Major Disaster Declarations include: Box Elder, Tooele, Salt Lake, Summit, Davis, Morgan, Iron, and Wayne counties. The counties with LHMP rankings that correlate with various federal declarations include: Box Elder, Tooele, Utah, Summit, Wasatch, Grand, Piute, and Wayne counties.

A limitation with the above analysis is that it only takes into account disaster events that were federally declared and does not address those disaster events that never met certain federal thresholds.

LHMP ANALYSIS

Hazard Vulnerability

For the SHMP 2019 update, the SHMPC reviewed the county LHMPs to gather data on the vulnerability and losses related to people, residential units, commercial units, and critical facilities for each county that reported such data. Not all counties had such data in their LHMP. See the individual hazard chapters for more details and information.

Table 7. Dam Failure Vulnerability as Reported in LHMPs

County	People	Residential Units		Commercial Units		Critical Facilities
		Units	Value	Units	Value	
Box Elder	2570	821	\$138,005,476	106	\$90,428,808	25
Cache	9636	2974	\$627,158,439	159	\$158,458,997	61
Carbon						15
Emery						42
Grand						24
Morgan	4016	1323	\$268,569,900	33	\$8,272,812	
Rich	502	154	\$14,735,154	14	\$1,198,151	18
Salt Lake	120,703	51,009	\$9,665,508,700	6,052	\$3,719,874,395	66
Tooele	19,349	5826	\$874,487,874	388	\$393,307,807	117
Weber	38,738	991	\$144,091,400	249	\$157,957,771	29
Total	195,514	63,098	\$11,732,556,943	7001	\$4,529,498,741	397

Table 8. Earthquake Vulnerability as Reported in LHMPs

County	People	Residential Units		Commercial Units		Critical Facilities
		Units	Value	Units	Value	
Box Elder	27,820	8888	\$1,545,521,701	1100	\$759,298,040	340
Cache	9222	2710	\$751,026,178	247	\$176,557,372	674
Carbon	99	3296	\$319,740,000	512	\$60,300,000	53
Davis		41310		954		
Emery	56	2475	\$22,550,000	284	\$10,230,000	89
Grand		1048	\$14,720,000	88	\$5,320,000	1
Morgan		3274		45		
Rich	424	130	\$16,972,688	4	\$717,171	11
Salt Lake		157,705		5199		
San Juan		1309	\$15,680,000	79	\$4,380,000	
Tooele	4549	1383	\$275,924,448	123	\$136,379,438	50
Weber		29457		1961		216

Table 9. Flood Vulnerability as Reported in LHMPs

Flood						
County	People	Residential Units		Commercial Units		Critical Facilities
		Units	Value	Units	Value	
Box Elder	1566	494	\$118,364,979	164	\$94,760,779	64
Cache	5490	1695	\$452,286,843	182	\$181,492,919	49
Carbon	370	68	\$12,000,000	2	\$5,160,000	22
Davis	2,311	245	\$37,810,000	3	\$18,370,000	
Emery	55	11	\$4,050,000	2	\$3,690,000	58
Garfield		405	\$37,465,708	35	\$8,468,743	
Grand	284	82	\$14,350,000	1	\$6,530,000	26
Iron		2030	\$236,000,955	345	\$142,570,470	
Kane		288	\$32,810,419	39	\$11,078,175	
Morgan	539	117	\$6,370,000		\$2,850,000	
Salt Lake	13,777	2,255	\$342,730,000	47	\$331,750,000	
San Juan	424	77	\$21,960,000		\$1,410,000	
Tooele	8350	2502	\$444,319,997	97	\$66,180,069	55
Weber	1789	378	\$27,530,000	7	\$30,570,000	3
Washington		8687	\$1,756,890,240	331	\$294,807,500	

Table 10. Landslide Vulnerability as Reported in LHMPs

Landslide						
County	People	Residential Units		Commercial Units		Critical Facilities
		Units	Value	Units	Value	
Beaver		171	\$18,066,873			
Box Elder	3724	1189	\$237,702,202	112	\$32,450,429	74
Cache	9673	2986	\$805,930,668	196	\$53,623,845	87
Carbon	127	97	\$7,627,789			
Davis	41,544	11476	\$2,232,460,200	363	\$44,750,388	
Emery						17
Garfield		207	\$26,237,726	10	\$1,091,367	
Grand	147	102	\$12,801,000			8
Iron		1831	\$282,353,651	38	\$20,362,484	
Kane		1351	\$135,336,912	54	\$78,798,611	
Morgan	4,016	1323	\$268,569,000	33	\$8,272,812	
Rich	2520	773	\$133,465,568	10	\$5,447,919	260
Salt Lake	90,588	29,894	\$6,058,717,500	488	\$146,578,278	
Tooele	492	151	\$37,182,771	17	\$18,286,368	51
Weber	40,531	13916	\$2,023,386,400	125	\$1,903,607,575	4
Washington		6754	\$1,343,669,300	402	\$316,394,600	

Table 11. Problem Soils Vulnerability as Reported in LHMPs

Problem Soils						
County	People	Residential Units		Commercial Units		Critical Facilities
		Units	Value	Units	Value	
Carbon						57
Garfield		285	\$29,195,700	27	\$6,035,685	
Iron		6380	\$835,741,695	810	\$312,098,537	
Kane		175	\$13,997,003	15	\$2,175,190	
Morgan	2,875	964	\$195,692,000	33	\$8,272,812	
Rich	664	204	\$37,399,143	5	\$3,471,278	
Tooele	23,121	7225	\$1,198,967,090	184	\$373,017,483	87
Weber						7
Washington		7707	\$1,258,875,905	176	\$182,409,965	

Table 12. Wildfire Vulnerability as Reported in LHMPs

Wildfire						
County	People	Residential Units		Commercial Units		Critical Facilities
		Units	Value	Units	Value	
Beaver		1224	\$83,432,402	110	\$38,318,920	
Box Elder	15,139	4837	\$898,094,506	770	\$554,169,413	
Cache	31,825	9823	\$2,060,433,961	757	\$1,193,882,541	72
Carbon	4886	2184	\$171,743,208	153	\$262,900,000	6
Davis	10,804	4027	\$804,139,154	290	\$328,930,000	
Emery	1890	630	\$85,113,000	56	\$21,640,000	18
Garfield		608	\$74,196,098	30	\$7,710,030	
Grand	1402	712	\$886,440,00	62	\$47,120,000	11
Iron		5248	\$738,298,799	329	\$195,350,668	
Kane		1215	\$114,697,339	56	\$22,926,337	
Morgan	3575	1254	\$259,274,500	35	\$7,805,872	
Salt Lake	70,795	5424	\$1,785,312,688	419	\$1,809,855,542	
San Juan	1588	397	\$54,627,200	15	\$11,700,000	19
Tooele	46,824	14539	\$3,172,545,916	513	\$904,493,694	196
Weber	3850	3188	\$920,986,200	107	\$86,747,175	8
Washington		22,864	\$4,902,165,200	1,299	\$772,896,700	
Total	192,578	78,174	\$16,125,060,171	5001	\$6,266,446,892	330

CRITICAL INFRASTRUCTURE

An analysis of critical infrastructure was performed on airports, electric substations, power plants, healthcare facilities, schools, police stations, fire stations, railroads, local roads, highways and interstates, NPMS pipelines, and transmissions lines to show how many facilities or mileage are at risk to avalanches, dam inundation, earthquakes (within 0.5 miles of a Quaternary fault and within a liquefaction zone), landslides, debris flows, and wildfires. To view the detailed results of the critical infrastructure analysis for each county see the tables below. To view a list of the name of each critical facility that is at risk for each county see the appendix.

Table 13. Critical Infrastructure at Risk to Hazards

Critical Infrastructure	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow	Wildfire
(number)							
Airports	1	5	13	17	94	1	8
Electric Substations	30	110	219	447	607	11	117
Power Plants	2	2	9	14	27	1	6
Healthcare Facilities	15	254	391	793	1037	1	59
Schools	37	294	451	1075	1504	1	75
Police Stations	5	49	60	103	203	0	14
Fire Stations	19	61	86	166	377	2	30
Total Number	109	775	1229	2615	3849	17	309
(miles)							
Railroads	62	556	157	1222	2579	68	496
Local Roads	10045	4322	5163	11796	101745	5014	4562
Highways and Interstates	570	865	581	1787	6968	284	566
NPMS Pipelines	0.0051	476	329	982	5098	215	0.0045
Transmission Lines	347	393	722	2152	5512	344	986
Total Miles	11023	6612	6952	17939	121903	5924	6610

The tables below indicate the number of critical facilities at risk sorted from highest to lowest per each hazard analyzed and also the mileage of critical infrastructure at risk (sorted from highest to lowest) to the hazards. Data is based on Table 13 above.

Critical Infrastructure vs. Hazards

(Number of critical facilities)

Landslide Susceptibility	3849
Liquefaction	2615
Near a Fault	1229
Dam Inundation	775
Wildfire	309
Avalanche	109
Debris Flow	17

Critical Infrastructure vs. Hazards

(Mileage of critical infrastructure)

Landslide Susceptibility	121,903
Liquefaction	17,939
Avalanche	11,023
Near a Fault	6,952
Dam Inundation	6,612
Wildfire	6,610
Debris Flow	5,924

Table 14. Airports at Risk to Hazards

Airports							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver					3		
Box Elder				2	3		
Cache				1	1		
Carbon					2		
Daggett					3		
Davis				4	4		1
Duchesne		1			2		
Emery					2		
Garfield		1	4		8		1
Grand					4	1	
Iron		1	1		7		1
Juab					1		
Kane					6		
Millard			3		4		
Morgan	1				1		
Piute					1		
Rich							
Salt Lake				3	3		
San Juan			1		12		
Sanpete					2		1
Sevier			1		2		
Summit							
Tooele		1			4		1
Uintah					5		
Utah		1		6	5		1
Wasatch					1		
Washington			3		5		2
Wayne					2		
Weber				1	1		
Total	1	5	13	17	94	1	8

Table 15. Electric Substations at Risk to Hazards

Electric Substations							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver			2		6		1
Box Elder	1	3	4	11	14	1	4
Cache	5	2	8	8	7	1	4
Carbon	1	1	2		8	1	2
Daggett			0				
Davis	2	8	5	37	34		10
Duchesne		1			8		
Emery	1	1	4		8		
Garfield			3		7		
Grand			6		7		
Iron			7		10		4
Juab			3		3		2
Kane			1		10		2
Millard			1		3		
Morgan	2	2			3	1	
Piute							
Rich			1		2		
Salt Lake		37	111	228	206	1	32
San Juan			5		31		
Sanpete	1				3		1
Sevier			2		3		
Summit	2	2	1		11	1	
Tooele		1	10		22		6
Uintah		5			22		
Utah	1	33	34	123	115	4	33
Wasatch	9	2			6	1	2
Washington			3		24		6
Wayne					1		
Weber	5	12	6	40	33		8
Total	30	110	219	447	607	11	117

Table 16. Power Plants at Risk to Hazards

Power Plants							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver							
Box Elder							
Cache				1	1		
Carbon					3	1	1
Daggett							
Davis		1		2	1		
Duchesne							
Emery	1				2		
Garfield							
Grand							
Iron							
Juab					1		
Kane							
Millard			5		2		1
Morgan					1		
Piute							
Rich							
Salt Lake			1	5	5		2
San Juan							
Sanpete							
Sevier							
Summit			1				
Tooele					1		
Uintah					1		
Utah		1	2	5	5		1
Wasatch	1				1		
Washington					2		
Wayne							
Weber				1	1		1
Total	2	2	9	14	27	1	6

Table 17. Healthcare Facilities at Risk to Hazards

Healthcare Facilities							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver			6		8		3
Box Elder	2		32	22	21		1
Cache				40	40		
Carbon		3			14		1
Daggett					1		
Davis		21	10	98	92		3
Duchesne		2			14		
Emery		2			4		
Garfield		1			6		
Grand		3	14		7		
Iron	2	10	9		23		1
Juab			48		8		1
Kane			1		4		1
Millard					8		3
Morgan			2		1		
Piute					1		
Rich					3		
Salt Lake		64	184	377	350		7
San Juan					20		
Sanpete					19		1
Sevier		9	9		16		
Summit			2		9		1
Tooele		11			14		6
Uintah					16		
Utah		100	41	177	170		7
Wasatch	9	2			5		
Washington		15	12		89	1	16
Wayne					3		
Weber	2	11	21	79	71		7
Total	15	254	391	793	1037	1	59

Table 18. Schools at Risk to Hazards

Schools							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver			9		12		2
Box Elder	6		41	33	37		2
Cache		2	6	67	66		
Carbon		1			25		
Daggett	5				7		1
Davis		15	29	147	132		6
Duchesne		13			22		
Emery		3			14		
Garfield					17		
Grand		8	11		12		
Iron		13	36		37		
Juab			42		18		
Kane			2		15		1
Millard					14		
Morgan	8	7			7		
Piute			4		10		
Rich			2		9		
Salt Lake		59	145	453	417	1	10
San Juan					23		
Sanpete		4			32		10
Sevier		11	20		29		8
Summit	2	1	21		38		
Tooele		16			38		
Uintah		1			20		
Utah		92	39	250	229		17
Wasatch	11	8			16		2
Washington		14	16		83		11
Wayne					9		
Weber	5	26	28	125	116		5
Total	37	294	451	1075	1504	1	75

Table 19. Police Stations at Risk to Hazards

Police Stations							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver			9		12		2
Box Elder	6		41	33	37		2
Cache		2	6	67	66		
Carbon		1			25		
Daggett	5				7		1
Davis		15	29	147	132		6
Duchesne		13			22		
Emery		3			14		
Garfield					17		
Grand		8	11		12		
Iron		13	36		37		
Juab			42		18		
Kane			2		15		1
Millard					14		
Morgan	8	7			7		
Piute			4		10		
Rich			2		9		
Salt Lake		59	145	453	417	1	10
San Juan					23		
Sanpete		4			32		10
Sevier		11	20		29		8
Summit	2	1	21		38		
Tooele		16			38		
Uintah		1			20		
Utah		92	39	250	229		17
Wasatch	11	8			16		2
Washington		14	16		83		11
Wayne					9		
Weber	5	26	28	125	116		5
Total	37	294	451	1075	1504	1	75

Table 20. Fire Stations at Risk to Hazards

Fire Stations							
County	Avalanche	Dam Inundation	Near a Fault	Liquefaction	Landslide Susceptibility	Debris Flow Risk	Fire Risk: Med-High
Beaver		2	5		4		1
Box Elder	1		3	10	15		
Cache		1	3	16	15		
Carbon	1	1	2		7		
Daggett					3		
Davis	1	3	4	17	15		1
Duchesne		2			7		1
Emery		2			8		
Garfield		0			11		1
Grand		1	3		7		
Iron	1	4	7		8		1
Juab					9		1
Kane			2		14		2
Millard		3	1		12		
Morgan	2	2			2		1
Piute		2	2		4		
Rich		1	1		4		
Salt Lake		9	20	68	66	1	2
San Juan	1				13		
Sanpete			1		12		1
Sevier		2	2		8		
Summit	2	2	4		13	1	1
Tooele		3	1		17		4
Uintah		1			6		
Utah	1	14	5	34	33		4
Wasatch	7	1			5		
Washington		1	16		32		7
Wayne					8		
Weber	2	4	4	21	19		2
Total	19	61	86	166	377	2	30

LHMP MITIGATION STRATEGIES

A review of the mitigation strategies in LHMPs was also conducted to determine the percent of various categories of mitigation strategies. The categories of mitigation strategies include: Education/Information: public information programs on hazards; Codes & Standards/Ordinance: adoption of codes, standards, or ordinances for hazard mitigation; Flood Control: lessening the frequency or severity of flooding and decreasing predicted flood damage; Planning/Mapping: development of hazard mitigation plans and hazard mapping; Vegetation Management: reduction or management of wildfire fuel loads; Warning System: providing the public advance warning of an emergency; Non-structural Retrofit: earthquake/seismic retrofit programs that are nonstructural; Elevation: elevation of flood-prone structures; Equipment: Equipment for emergency management; Technology Development: technological tools and solutions for hazard mitigation; Relocation: voluntary physical relocation of an existing structure to an area outside of a hazard-prone area; Hazardous Material: lessening the potential for or decreasing damage from hazardous material releases; Acquisition: voluntary acquisition of existing flood-prone structures; and Erosion Control: reduction of risk to structures or infrastructure from erosion and landslides.

Table 21. LHMP Mitigation Strategies

County	Mitigation Strategy													
	Education	Codes & Standards	Flood Control	Plan/Map	Veg Mgmt	Warning System	Non-structural Retrofit	Elevation	Equipment	Technology	Relocation	Hazardous Material	Acquisition	Erosion Control
Box Elder	Y	N	Y	Y	N	Y	Y	N	N	N	N	N	N	N
Cache	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y
Carbon	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y
Daggett	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
Davis	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y
Duchesne	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
Emery	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y
Garfield	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y
Grand	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	Y
Iron	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y
Juab	Y	Y	Y	Y	N	Y	N	N	Y	N	N	N	N	N
Kane	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y
Millard	Y	Y	Y	Y	N	Y	N	N	Y	N	N	Y	N	N
Morgan	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y
Piute	Y	N	Y	Y	Y	Y	N	N	Y	N	N	Y	N	N
Rich	Y	N	N	Y	Y	Y	N	N	N	N	N	N	N	N
Salt Lake	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
San Juan	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y
Sanpete	Y	Y	Y	Y	N	Y	N	N	Y	N	N	N	N	N
Sevier	Y	Y	Y	Y	N	Y	N	Y	Y	N	N	Y	N	N
Summit	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Tooele	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N
Uintah	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
Utah	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Wasatch	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Washington	Y	Y	Y	Y	N	Y	N	N	Y	N	N	Y	N	N
Wayne	Y	Y	N	N	N	Y	N	N	Y	N	N	N	N	N
Weber	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Total percent of LHMPs identifying as proposed mitigation	96.50%	89.60%	93.10%	93.10%	68.90%	86.20%	58.60%	44.80%	65.50%	10.30%	34.40%	34.40%	27.50%	55.10%

The mitigation strategies that had the highest percentage of being listed in LHMPs were Education/Information, Flood Control, Planning/Mapping, and Codes & Standards/Ordinances. The least categories of mitigation strategy listed in LHMPs includes Acquisition, Relocation and Hazardous Material.

Table 22. Percentage of LHMPs Identifying as Proposed Mitigation

Mitigation Strategy	% of Strategies in LHMPs per County
Education/Information	96.50%
Codes & Standards/Ordinance	89.60%
Flood Control	93.10%
Planning/Mapping	93.10%
Vegetation Management	68.90%
Warning System	86.20%
Non-structural Retrofit	58.60%
Elevation	44.80%
Equipment	65.50%
Technology Development	10.30%
Relocation	34.40%
Hazardous Material	34.40%
Acquisition	27.50%
Erosion Control	55.10%

LOCAL HAZARD MITIGATION PLANS

Here are links to the current LHMPs in the State:

County Plans

- Pre-Disaster Mitigation Plan: Bear River Region, Utah (2015)
http://brag.utah.gov/wp-content/uploads/2015/08/BRAG_PDM_Plan_FINAL_8-17-15.pdf
- Davis County Natural Hazard Pre-Disaster Mitigation Plan (2016)
http://www.centervilleut.net/downloads/emergency/predisaster_mitigation_plan.pdf
- Emery County Pre-Disaster Hazard Mitigation Plan 2018
<http://emerycounty.com/>
- Grand County Pre-Disaster Hazard Mitigation Plan 2018
https://www.grandcountyutah.net/DocumentCenter/View/4669/Region-7-Grand-County-PDM-2018-V4-11_1-SAM?bidId=
- Morgan County Natural Hazard Pre-Disaster Mitigation Plan
<http://www.morgan-county.net/Home/NewsModuleMainPage/ArtMID/3334/ArticleID/1239>
- Multi-Jurisdictional Natural Hazard Mitigation Plan: Five County Association of Governments Five Year Plan March 2017 – March 2022
https://hazardmitigationplan.files.wordpress.com/2017/09/five-county_fema-approved-nhmp_full-resolution-size.pdf

- Mountainland Pre-Disaster Hazard Mitigation Plan 2017
<https://mountainland.org//img/hazards/2017/Part%201%20Introduction.pdf>
- Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan (2015)
<https://www.slcoem.org/current-ongoing-projects>
- San Juan County Pre-Disaster Mitigation Plan (2018)
<http://sanjuancounty.org/index.php/public-safety-courts/emergency/>
- Six County Association of Governments Pre-Disaster Mitigation 5-Year Plan
<http://sixcounty.com/wp-content/uploads/2016/01/Section-1-Introduction.pdf>
- Pre-Disaster Mitigation Plan: Tooele County, Utah (2016)
<https://tceem.org/pre-disaster-mitigation-plan/>
- Weber County Pre-Disaster Mitigation Plan 2015
<https://www.utah.gov/pmn/files/210527.pdf>

City Plans

- Castle Valley, Utah: Hazard Mitigation Plan 2015
<http://www.castlevallleyutah.com/pdfs/11192015HazardMitPlanFINALCompleteApx.pdf>

Special District Plans

- Granite School District Pre-Disaster Mitigation Plan (2018)
<https://www.graniteschools.org/wp-content/uploads/2018/07/GSD-Pre-Disaster-Mitigation-Plan-7.12.18.pdf>